

What is claimed is:

- Sub a1*
1. A method for labeling of individual cells comprising:
providing at least one target cell;
providing at least one particle coated with at least one dye;
propelling said coated particle toward said target cell to thereby cause said coated
5 particle to contact said cell for a time sufficient to cause labeling of said target cell by
release of said dye from said particle; and
detecting the presence of said dye. *lab*

2. The method of claim 1, wherein said dye is selected from the group consisting
of lipophilic dyes, voltage sensitive dyes, pH sensitive dyes, nucleic acid dyes, ion
sensitive dyes, protein binding dyes and combinations thereof.

3. The method of claim 1, wherein said dye is a fluorescent dye.

4. The method of claim 1, wherein said propelling is by a biolistic means.

- Sub a2*
5. A method for labeling of individual cells comprising:
providing at least one target cell, said target cell having a cell membrane;
providing at least one particle coated with at least one lipophilic dye;
propelling said coated particle toward said target cell to thereby cause said coated
5 particle to contact said cell membrane for a time sufficient to cause labeling of said target
cell by release of said dye from said particle; and
detecting the presence of said dye. *lab*

6. The method of claim 5, wherein said at least one lipophilic dye includes at
least one carbocyanine dye.

7. The method of claim 5, wherein said dye is selected from the group consisting
of voltage sensitive dyes, pH sensitive dyes, nucleic acid dyes, ion sensitive dyes, protein
binding dyes and combinations thereof.

8. The method of claim 5, wherein said dye is a fluorescent dye.

9. The method of claim 5, wherein said propelling is by a biolistic means.

- See a3*
10. A method for labeling of individual cells comprising:
providing a plurality of target cells;
providing a plurality of particles coated with at least one dye;
propelling said coated particles toward said target cells to thereby cause said
5 coated particles to contact said cells for a time sufficient to cause labeling of said target
cells by release of said dye from said particles; and
detecting the presence of said dye. *lab*

11. The method of claim 10, wherein said dye is selected from the group
consisting of lipophilic dyes, voltage sensitive dyes, pH sensitive dyes, nucleic acid dyes,
ion sensitive dyes, protein binding dyes and combinations thereof.

12. The method of claim 10, wherein said dye is a fluorescent dye.

13. The method of claim 10, wherein said plurality of particles is contained in
least one macroprojectile.

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14. The method of claim 13, further comprising causing said at least one
macroprojectile to contact a macroprojectile stopping means before contacting said target
cells, said macroprojectile stopping means capable of stopping said macroprojectile while
allowing at least one coated particle to continue toward said target cells.

15. The method of claim 14, wherein said macroprojectile stopping means is a
filter.

16. The method of claim 15, wherein said filter has a pore size of between about 1
and about 8 μm .

17. The method of claim 10, wherein said propelling is by a biolistic means.

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18. A method for labeling of individual cells comprising:
providing at least one particle containing at least one lipophilic dye selected from
the group consisting of DiO, DiI, DiD and any combination thereof to form a coated
particle;
5 providing at least one target cell, said target cell having a cell membrane;

propelling said coated particle toward said target cell to thereby cause said coated particle to contact said cell membrane for a time sufficient to cause labeling of said target cell by release of said dye from said particle; and
detecting the presence of said dye. *lab*

19. The method of claim 18, wherein said propelling is by a biolistic means.

20. A method for monitoring a physiological process in a cell comprising:
providing at least one particle containing at least one dye that is sensitive to a physiological process;

providing at least one living target cell;

5 propelling said coated particle toward said target cell to thereby cause said coated particle to contact said cell for a time sufficient to cause labeling of said target cell by release of said dye from said particle;

detecting changes in said dye; and

10 correlating said changes in said dye with changes in physiological process within said target cell.

21. The method of claim 20, wherein said dye is a lipophilic dye.

22. The method of claim 20, wherein said dye is selected from the group consisting of pH sensitive dyes, voltage sensitive dyes and ion sensitive dyes.

23. The method of claim 20, wherein said propelling is by a biolistic means.

24. A method for determining changes in cell membrane voltage potential comprising:

providing at least one particle containing at least one dye that is a voltage-sensitive dye;

5 providing at least one target cell, said cell having a cell membrane and said cell membrane having an inner surface and an outer surface;

propelling said coated particle toward said target cell to thereby cause said coated particle to contact said cell for a time sufficient to cause labeling of said target cell by release of said dye from said particle;

10 detecting changes in said dye; and

correlating said dye changes with changes in cell membrane voltage potential.

25. The method of claim 24, wherein said voltage sensitive dye is a lipophilic dye.

26. The method of claim 25, wherein said changes in voltage potential are detected by movement of said dye between said inner surface and said outer surface of said cell membrane.

27. The method of claim 24, wherein said propelling is by a biolistic means.

28. A method for measuring membrane fluidity comprising:
providing at least one target cell, said target cell having a cell membrane;
providing at least one particle coated with at least one lipophilic dye;
propelling said coated particle toward said target cell to thereby cause said coated
5 particle to contact said cell membrane for a time sufficient to cause labeling of said target
cell membrane by release of said dye from said particle; and
detecting the movement of said dye in said membrane as a function of time.

29. The method of claim 29, wherein said propelling is by a biolistic means.

30. A method of diagnosing a disease, disorder or condition comprising:
providing at least one particle coated with at least one dye;
providing at least one target cell;
propelling said coated particle toward said target cell to thereby cause said coated
5 particle to contact said target cell for a time sufficient to cause labeling of said target cell
by release of said dye from said particle;
detecting the presence of said dye; and
utilizing the presence of said dye to diagnose said disease, disorder or condition.

31. The method of claim 30, wherein said propelling is by a biolistic method.

32. A method for examining the morphology of a cell comprising:
providing at least one particle coated with at least one dye;
providing at least one target cell;

- propelling said coated particle toward said target cell to thereby cause said coated
- 5 particle to contact said target cell for a time sufficient to cause labeling of said target cell by release of said dye from said particle;
- detecting the presence of said dye; and
- utilizing the presence of said dye to examine a morphology characteristic of said cell.

33. The method of claim 32 wherein said propelling is by a biolistic means.

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34. A method for labeling individual cells comprising:
- providing a plurality of target cells;
- providing a plurality of particles containing a plurality of nucleotide sequences encoding fluorescent proteins having different emission spectra; and
- 5 propelling said plurality of particles toward said plurality of cells to cause said particles to enter said cells and reside in said cells.

35. The method of claim 34, wherein said fluorescent proteins with different emission spectra are red fluorescent protein, green fluorescent protein or variants of green fluorescent protein.

36. The method of claim 34, wherein said propelling is by a biolistic means.

37. A tissue comprising:

cells individually labeled with a plurality of dyes, wherein a majority of adjacent cells contain dyes with different emission spectra..

38. The tissue of claim 37, wherein said tissue contains at least 25 labeled cells.

39. The tissue of claim 37, wherein 75% of adjacent cells contain dyes or combinations of dyes with different emission spectra.

40. The tissue of claim 37, wherein 90% of adjacent cells contain dyes or combinations of dyes with different emission spectra.

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